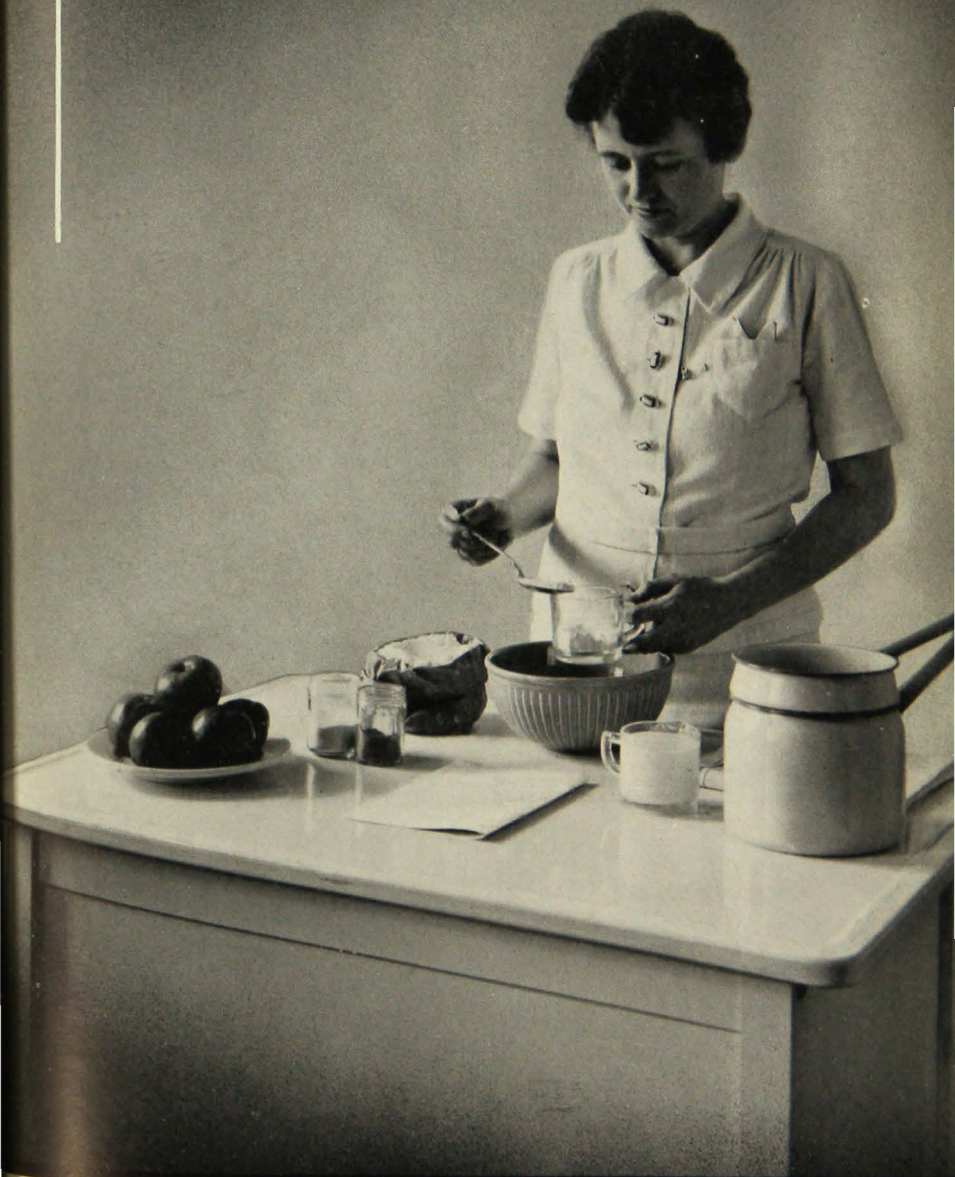


# USING DRY SKIMMILK

by ALICE M. CHILD



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AGRICULTURAL EXTENSION DIVISION  
UNIVERSITY OF MINNESOTA

# USING DRY SKIMMILK

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Milk is regarded as an essential in the diet of both children and adults. How an adequate quantity of milk can be supplied on limited and very limited budgets and how food value can be increased for the undernourished are two questions uppermost in our minds today. We answer these questions by saying, "Use dry skimmilk."

The experimental work was not undertaken with the idea of replacing the use of fresh milk. It was, rather, an effort to find ways of using dry skimmilk as a supplement to fresh milk, when the supply of the latter is limited by economic conditions or by others, such as camping or traveling.

## What Is Dry Skimmilk?

Dry skimmilk is fresh, sweet, liquid milk, from which most of the fat and water have been removed, leaving a fine, creamy-white powder. This powder, often called "dry milk solids," is the product resulting from the removal of water and fat from milk and contains not more than 5 per cent of moisture and not more than 1.5 per cent of fat.

The two main types of processing used in the manufacture of dry skimmilk are commonly referred to as the "spray" process and the "roller" or "drum" process. The dry skimmilk used for human consumption is generally prepared by the "spray" process, altho high-grade roller-process dry skimmilk may be used.

Table 1  
Average Composition of Fresh and Dried, Evaporated and Condensed Milk\*

Kind	Water	Protein	Fat	Lactose	Ash
	per cent	per cent	per cent	per cent	per cent
Whole, fresh .....	87.27	3.47	3.66	4.91	0.69
Whole, dried .....	2.00	26.91	28.65	36.50	5.94
Skim, fresh .....	90.35	3.72	0.15	4.98	0.80
Skim, dried .....	3.89	35.42	1.74	48.74	8.08
Whole, evaporated .....	73.63	6.71	8.22	10.13	1.55
Whole, sweetened .....	27.03	7.85	8.99	12.65	1.76
condensed .....				( +41.65 )	
				sucrose	

\* Rogers, L. A. (By Associates) *Fundamentals of Dairy Science*. The Chemical Catalog Co., Inc., New York (1928).

## Value of Skimmilk

Whole milk is one of the most valuable foods in the diet. Dry skimmilk contains all the milk solids of whole milk except the fat and fat-soluble substances. Therefore, dry skimmilk is a concentrated source of lactose or milk sugar, protein, calcium, phosphorus, and other minerals

and is rich in Vitamins B and G. Since it may be added to food products in fairly large proportions, it is a cheap source of nutrients often lacking in minimum-cost diets.

Table 1 compares the nutrients in whole and skimmilk, fresh and dried milk, evaporated and condensed milk, and Table 2 gives the vitamin content.

Table 2

## Vitamin Content of Fresh and Dried, Evaporated and Condensed Milk\*

Kind	A	B	C	G
Whole, fresh .....	+++	++	variable (0 to +)	+++
Whole, dried .....	+++	++	variable (0 to +)	+++
Skim, fresh .....	+	++	variable (0 to +)	+++
Skim, dried .....	+	++	variable (0 to +)	+++
Whole, evaporated .....	+++	++	?	+++
Whole, condensed .....	+++	++	variable (0 to +)	+++

+ indicates that the food contains the vitamin.

++ indicates that the food is a good source of the vitamin.

+++ indicates that the food is an excellent source of the vitamin.

? indicates doubt as to presence or relative amount.

\* Sherman, H. C., Chemistry of Food and Nutrition, Macmillan Co., New York, 4th Edition (1932).

## Cost of Dry Skimmilk

Dry skimmilk may be purchased in 200-pound barrels and drums or in 100-pound and 50-pound drums, the cost depending upon the quantity purchased. Packaging of small quantities of skimmilk powder is being studied, and when suitable containers are found, it may be purchased in two-, five-, or ten-pound lots. Naturally, the cost in small packages will be greater than when packed in barrels.

## Keeping Quality of Dry Skimmilk

Since the fat content of dry skimmilk is very low, the milk does not easily deteriorate and can be kept for at least six months under ordinary conditions, if the milk is kept dry and is stored in a reasonably cool place. Because dry skimmilk readily absorbs moisture, causing it to cake, it should be kept in an air-tight receptacle.

## Solubility of Dry Skimmilk

While dry skimmilk is soluble in both cold and hot water, it dissolves most readily at 85° F. to 90° F. A much higher or lower temperature than lukewarm will dissolve dry skimmilk as thoroly, but it will take a longer time.

## How to Use Dry Skimmilk

Dry skimmilk may be used in the powdered form, or it can be re-constructed with water and used like fluid milk. In nearly all cases,

the resulting products are equally good, using either method. However, in a few recipes, such as soup, white sauce, or recipes containing a large proportion of liquid, it is better to reconstruct the dry skim milk and add it to the other ingredients according to the usual procedure.

### RECONSTRUCTION TABLES

Table 3  
Mixes Equivalent in Food Value to Fluid Skim milk

Water	Dry skim milk	Yield in liquid milk
1 cup	3 tablespoons	1 cup
1 pint	6 tablespoons	1 pint
1 quart	$\frac{3}{4}$ cup	1 quart
1 gallon	3 cups	1 gallon

Table 4  
Equivalents

Measure	Weight
1 tablespoon dry skim milk	7.09 grams or $\frac{1}{4}$ ounce
4 tablespoons dry skim milk	28.35 grams or 1 ounce
1 cup dry skim milk	113.4 grams or 4 ounces
4 cups dry skim milk	453.5 grams or 1 pound

#### Methods of reconstruction:

1. The following method of reconstructing dry skim milk is ordinarily used: Sprinkle dry skim milk on the surface of the liquid and mix with a spoon. Let it stand for 5 minutes or longer, then beat. For small amounts, a wire whip or Dover egg beater may be used; for large quantities, a commercial mixer. Beat one minute.

2. Add a small amount of water to the dry skim milk and rub to a smooth paste; then add the remainder of the liquid slowly, mixing it well.

### THE USE OF DRY SKIM MILK IN LOW-COST BUDGETS

In some homes the necessity for economy often results in an insufficient milk supply. By using dry skim milk for cooking and whole milk for drinking, it is possible to bring the total milk consumption to the desired amount. When dry skim milk is used to supplement the whole milk supply, certain food materials must be added to the diet to aid in building up a strong resistance to disease and to provide a balanced and adequate nutrition. To provide this protection, use butter and one or more of the following food products in the daily menu: eggs, cheese, green vegetables (especially string beans, peas, spinach, and kale), carrots, tomatoes, liver, kidney, pumpkin, sweet potatoes, and yellow corn.

## RECIPES FOR USING DRY SKIMMILK

Level measurements are used in all recipes. Spray-process dry skimmilk was used in testing the recipes.

## BEVERAGE

## Cocoa (6 servings)

1¼ cups dry skimmilk	½ teaspoon salt
5 tablespoons cocoa	5 cups water
4 tablespoons sugar	

1. Mix dry ingredients thoroly.
2. Add water slowly, one cup cold and remainder hot, stirring to keep mixture smooth.
3. Cook 5 minutes over low heat.

## BREADS

## Baking Powder Biscuits (18-24 biscuits, 2" diameter)

Temperature—425° F.

Time—12 to 15 minutes

3 cups flour	½ cup dry skimmilk
1¼ teaspoons salt	6 tablespoons shortening
6 teaspoons baking powder	1 cup water

1. Sift dry ingredients.
2. Work in shortening with fingers, fork, or two knives until the consistency of very coarse cornmeal.
3. Add liquid all at once and stir quickly until mixture thickens.
4. Place dough on a lightly floured board and roll or pat out ½ to 1 inch in thickness. If a fine grain is desired, knead for about ½ minute.
5. Cut biscuits with floured cutter, and place in baking pan.
6. Allow to stand at room temperature at least 15 minutes before baking.

## Variations

1. **Cheese Biscuits:** Sprinkle grated cheese on biscuit before baking, or add ½ cup grated cheese to biscuit dough, or prepare dough as for cinnamon rolls, using grated cheese in place of cinnamon and sugar.
2. **Cinnamon Rolls:** Add 2 tablespoons sugar to the ingredients. Roll dough ½ inch thick. Spread with fat, cinnamon and sugar. Roll dough into a long roll and cut crosswise ½ to 1 inch thick. Sprinkle with a mixture of sugar and cinnamon.
3. **Coffee Cake:** Add 2 tablespoons sugar and 1 egg to the ingredients. Spread dough ½ inch thick in pan and cover top with fat and a mixture of sugar (6 tablespoons) and cinnamon (1 teaspoon) before baking.
4. **Dutch Apple Cake:** Prepare the same as coffee cake, spread in pan and cover with sliced apples.

## Drop Baking Powder Biscuits (24 biscuits)

Temperature—425° F.

Time—12 to 15 minutes

3 cups flour	½ cup dry skimmilk
1 teaspoon salt	½ cup shortening
4½ teaspoons baking powder	1½ cups water
1 tablespoon sugar	

**BREADS—Continued**

1. Sift dry ingredients.
2. Work in shortening with fingers, fork, or two knives until the consistency of very coarse cornmeal.
3. Add liquid all at once and stir quickly.
4. Drop from spoon on a greased tin and bake as baking powder biscuit, or bake in muffin tins.

**Cornmeal Griddle Cakes (24 to 28 cakes—4" to 5" diameter)**

2 cups flour	1 teaspoon salt
½ cup cornmeal	1 egg—well beaten
¾ cup dry skimmilk	2½ cups water
1 tablespoon sugar or corn syrup	2 tablespoons shortening
5 teaspoons baking powder	

1. Sift dry ingredients into mixing bowl.
2. Combine egg, water, and melted shortening and turn into a well, made in the dry ingredients. Gradually stir until smooth.
3. Bake on hot griddle, using about 2 tablespoons batter for each cake.
4. Turn when cake is brown on bottom, and bubbles are forming on top.

**Corn Pone (8 cakes 4" x 2" x ¾")**

Temperature—375° F. to 400° F.

Time—30 minutes

1 cup cornmeal	4 tablespoons melted bacon fat
½ cup dry skimmilk	¾ cup boiling water (approximately)
1 teaspoon salt	

1. Mix dry ingredients and add bacon fat.
2. Add just enough boiling water to hold the meal together.
3. When cool, shape into cakes, brushing tops with melted fat.
4. Bake on a greased baking sheet in a moderate oven.

Note: Serve hot with fried salt pork, bacon or sausages, and cream gravy.

**Yeast Potato Bread (6 one-pound loaves)**

Temperature—375° F.

Time—50 to 60 minutes

2 to 3 cakes compressed yeast	¾ cup shortening
1½ cups lukewarm water	3 cups mashed potato
6 cups potato water	3 to 4 cups dry skimmilk
¼ cup sugar	4½ quarts flour or more
2 to 2½ tablespoons salt	

1. Soften yeast in lukewarm water.
2. Heat potato water to lukewarm and pour over sugar, salt, and shortening. Add yeast and potato.
3. Fold in flour, which has been thoroly mixed with the dry skimmilk, until there are no sticky places left.
4. Place the dough on well floured board and fold the sides to center (8 or 10 times), pressing each fold firmly with the flat of the hand.

**BREADS—Continued**

5. Place in greased bowl, grease top, and cover.
6. Keep at temperature of 80° F. to 85° F. for about one hour. Dough should rise to almost double in bulk.
7. Place dough on board and fold down again. Allow to rise as before.
8. Shape into loaves and place in well greased pan.
9. Let rise again (about one hour) until almost double in bulk.
10. Bake in moderate oven.

**Yeast Bread (6 one-pound loaves)**

Temperature—375° F.

Time—50 to 60 minutes

2 to 3 cakes compressed yeast  
1½ cups lukewarm water  
6 cups water  
¼ cup sugar

2 to 2½ tablespoons salt  
¾ cup shortening  
3 to 4 cups dry skimmilk  
4½ quarts flour or more

Follow directions for Yeast Potato Bread.

**Yeast Rolls (18 to 24)**

Temperature—400° F.

Time—15 to 20 minutes

½ cake compressed yeast or more  
¼ cup lukewarm water  
1 cup water  
2 to 4 tablespoons sugar  
1½ teaspoons salt

2 to 4 tablespoons shortening  
½ to ¾ cup dry skimmilk  
3 cups flour or more  
0 to 1 egg (beaten)

1. Soften yeast in lukewarm water.
2. Heat water to lukewarm and pour over sugar, salt, and shortening. Add yeast.
3. Fold in flour, which has been thoroly mixed with the dry skimmilk, until there are no sticky places left.  
(If egg is to be used, add one cup of the flour to liquid, then egg, and beat thoroly. Add remainder of flour.)
4. Place dough on well floured board and fold the sides to center (8 or 10 times), pressing each fold firmly with flat of the hand.
5. Place in greased bowl, grease top, and cover.
6. Keep at temperature of 80° F. to 85° F. for about one hour. Dough should rise to almost double in bulk.
7. Place dough on board and fold down again. Allow to rise as before.
8. Shape rolls, place in well greased pan.  
(For Parker House rolls, shape dough in balls and allow to rise 20 to 30 minutes. Make a mark through the center, using edge of hand, brush with butter, and fold.)
9. Let rise again (about one hour) until almost double in bulk.
10. Bake in hot oven.

## CAKE AND COOKIES

## Gingerbread (8 servings)

Temperature—325° F.

Time—about 40 minutes

1½ cups flour  
 2 tablespoons sugar  
 ½ cup dry skimmilk  
 1 tablespoon baking powder  
 ½ teaspoon soda  
 ½ teaspoon salt  
 ½ teaspoon ginger

½ teaspoon cloves  
 ½ teaspoon cinnamon  
 1 egg  
 ¾ cup water  
 ½ cup molasses  
 ¼ to ½ cup shortening, melted

1. Sift dry ingredients.
2. Beat egg well, add water, molasses, and shortening.
3. Combine liquid and dry ingredients thoroly.
4. Pour into well greased shallow pan.
5. Bake in moderate oven.

## One-Egg Cake (8" x 8" x 2½")

Temperature—360° F.

Time—25 to 30 minutes

½ cup fat  
 1¼ cups sugar  
 1 egg  
 2¼ cups flour  
 ½ cup dry skimmilk

3 teaspoons baking powder  
 ½ teaspoon salt  
 1 cup water  
 1 teaspoon vanilla

1. Cream fat and add sugar slowly, beating as it is added.
2. Beat egg for one minute and fold it into fat and sugar.
3. Add sifted dry ingredients and water alternately. Begin and end with the dry ingredients. Beat well after each addition. Add vanilla.
4. Pour into greased pan and bake in moderate oven.

## One-Egg Cocoa Cake (9" x 9" x 2½")

Temperature—360° F.

Time—40 minutes

½ cup fat (lard)  
 1¼ cups sugar  
 1 egg  
 1½ cups flour  
 ½ cup dry skimmilk  
 5 tablespoons cocoa

3 teaspoons baking powder  
 ½ teaspoon soda  
 ¾ teaspoon salt  
 1 cup water  
 1 teaspoon vanilla

Use same method as for One-Egg Cake.

## Molasses Drop Cookies (60 small)

Temperature—350° F.

Time—about 15 minutes

¾ cup molasses  
 ½ cup shortening  
 1 egg (beaten)  
 ½ cup sugar  
 ½ cup water  
 2¾ cups flour

3 tablespoons dry skimmilk  
 4 teaspoons baking powder  
 ½ teaspoon soda  
 ½ teaspoon cinnamon  
 ½ teaspoon ginger  
 ½ teaspoon salt

1. Heat molasses and shortening until shortening is just melted.
2. Add to the mixture of beaten egg, sugar, and water in mixing bowl.
3. Add sifted dry ingredients and mix thoroly.



**CAKES AND COOKIES—Continued**

- Drop teaspoonfuls of mixture an inch apart on greased cookie sheet and bake in a moderate oven.
- Remove from pan at once.

**Peanut Butter Cookies (25 cookies)**

Temperature—375° F.

Time—10 minutes

$\frac{3}{4}$  cup peanut butter  
 $\frac{3}{4}$  cup corn syrup  
 1 egg (beaten)  
 $\frac{3}{4}$  cup flour  
 4 tablespoons dry skimmilk

$\frac{1}{2}$  teaspoon cinnamon  
 $\frac{1}{2}$  teaspoon soda  
 $\frac{1}{4}$  teaspoon salt  
 $1\frac{1}{2}$  teaspoons water

- Cream peanut butter and syrup.
- Add beaten egg, sifted dry ingredients, and water.
- Mix thoroly and chill 2 hours or more.
- Drop rounded teaspoonfuls of batter 2 inches apart on greased cookie sheet. Press flat with a fork.
- Bake in a moderate oven.

**Quick Ginger Snaps (6 dozen—2" diameter)**

Temperature—400° F.

Time—7 to 8 minutes

$\frac{1}{2}$  cup molasses  
 $\frac{1}{2}$  cup lard  
 $\frac{1}{4}$  cup hot water  
 $\frac{1}{2}$  tablespoon ginger

$\frac{1}{2}$  teaspoon salt  
 2 cups flour  
 $\frac{1}{4}$  cup sugar  
 $\frac{1}{2}$  cup dry skimmilk

- Place molasses, lard, and hot water in a bowl and blend.
- Add sifted dry ingredients and mix thoroly.
- Pinch off pieces of dough the size of  $\frac{3}{4}$ " marbles, roll into balls, and press flat (2" in diameter) on cookie sheet.
- Bake in hot oven.

**CEREALS****Cereals—Proportions and Time Table**

Cereal	Amount	Salt	Water	Dry skimmilk	Time in double boiler
Cornmeal	1 cup	$1\frac{1}{2}$ teaspoons	6 cups	$\frac{3}{4}$ cup	1 hour or more
Cream of Wheat	1 cup	$1\frac{1}{4}$ teaspoons	5 to 6 cups	$\frac{3}{4}$ cup	$\frac{1}{2}$ hour
Cracked Wheat	1 cup	1 teaspoon	4 to 5 cups	$\frac{3}{4}$ cup	4 hours or more
Rice	1 cup	1 teaspoon	4 cups	$\frac{3}{4}$ cup	50 to 60 minutes
Rolled Oats	1 cup	$\frac{3}{4}$ teaspoon	3 cups	$\frac{3}{4}$ cup	50 to 60 minutes
Quick Oats	1 cup	$\frac{1}{2}$ teaspoon	2 to $2\frac{1}{2}$ cups	$\frac{1}{2}$ cup	10 to 15 minutes

- Pour cereal slowly into boiling salted water, stirring constantly to prevent lumping.
- Cook over direct heat until it thickens (about 5 minutes).
- Finish cooking in double boiler over hot water.
- Five minutes before cooking period is completed, add the dry skimmilk with a little water.

## DESSERTS

## Cereal Pudding (6 cups)

1 cup farina (or other cereal)	9 tablespoons dry skim milk
$\frac{1}{2}$ cup fat	$\frac{3}{4}$ cup cooked prunes
$\frac{3}{4}$ cup sugar	$\frac{1}{2}$ teaspoon salt
3 cups water	

1. Heat dry cereal in fat until light, golden brown, stirring constantly.
2. Make a syrup of the sugar and water, add cereal, heat to boiling, then cook over hot water about 15 minutes.
3. Add dry skim milk, mixed with a small amount of water, the prunes, and salt.
4. Serve hot or cold with milk.

Note: This method makes a delicious breakfast cereal.

## Cocoa Cornstarch Pudding (6 servings)

1 cup dry skim milk	$\frac{3}{4}$ cup sugar
$2\frac{1}{4}$ tablespoons cocoa	Few grains salt
3 tablespoons cornstarch or	3 cups water
6 tablespoons flour	$1\frac{1}{2}$ teaspoons vanilla

1. Mix dry ingredients thoroly. Add water slowly, one cup cold and remainder hot, stirring to keep mixture smooth.
2. Cook over direct heat, stirring until it thickens.
3. Cover and cook over hot water until there is no raw taste (about 15 minutes).
4. Add flavoring and pour into molds which have been dipped into cold water.
5. Chill.

## Prune Rice Pudding (6 servings)

Temperature—350° F.

Time—20 minutes

$\frac{3}{4}$ cup dry skim milk	$4\frac{1}{2}$ cups cooked rice
$\frac{1}{2}$ cup sugar	$1\frac{1}{2}$ tablespoons melted fat
$\frac{1}{4}$ teaspoon salt	2 eggs (beaten)
3 cups water	1 cup prunes (cooked)

1. Mix dry ingredients thoroly. Add water slowly, stirring to keep mixture smooth.
2. Add the remainder of the ingredients, except the prunes.
3. Grease a baking dish and make alternate layers of rice mixture and prunes cut in small pieces.
4. Bake in a moderate oven.

## MEATS

## Creamed Salt Pork (6 servings)

$\frac{3}{4}$ cup dry skim milk	$2\frac{1}{4}$ cups salt pork (cubed)
3 tablespoons flour	2 teaspoons onion (minced)
3 cups water	

1. Mix dry skim milk and flour. Add water slowly, stirring to keep mixture smooth.
2. Fry pork slowly until crisp. Remove from pan.
3. Add onion to the remaining fat, and brown.
4. Stir in the milk mixture and mix until smooth. Combine with the pork.

**MEATS—Continued**

**Meat Balls with Tomato Sauce (6 servings)**

1 pound ground beef	1 small onion (minced)
1 cup rolled oats	1 teaspoon salt
$\frac{1}{4}$ cup dry skimmilk	Pepper
2 cups canned tomatoes	

1. Mix ingredients, using  $\frac{1}{2}$  cup tomato.
2. Shape into balls. Brown in a frying pan, using a small amount of fat.
3. Cover balls with the remainder of the tomatoes.
4. Cover and cook very slowly for one hour.

**ONE-DISH MEALS**

**Italian One-Dish Meal (6 servings)**

$\frac{1}{4}$ onion (small)	2 cups cooked macaroni
2 teaspoons fat	1 cup cooked white or kidney beans
1 cup tomato	4 tablespoons dry skimmilk
$\frac{1}{2}$ teaspoon salt	

1. Cut onion fine and fry in fat until brown.
2. Add tomato and salt. Simmer  $\frac{1}{2}$  hour.
3. Combine with cooked macaroni and beans and reheat for 15 minutes.
4. Five minutes before cooking time is completed, add the dry skimmilk mixed in a small amount of water.

Variations: Green beans or peas may be substituted for the dried beans.  
 Add grated cheese.  $\frac{1}{8}$  cup strong cheese or  $\frac{1}{2}$  cup mild cheese.  
 Add a few drops of Worcestershire Sauce.

**Macaroni and Cheese (6 servings)**

Temperature—350° F.	Time—About 45 minutes
5 tablespoons dry skimmilk	$1\frac{1}{2}$ cups cooked macaroni
1 teaspoon salt	$\frac{1}{2}$ teaspoon onion (minced)
$1\frac{1}{4}$ cups water	$\frac{1}{2}$ cup grated cheese
$\frac{3}{4}$ cup soft bread crumbs	1 egg—well beaten
3 tablespoons fat (melted)	

1. Mix dry skimmilk and salt. Add water slowly, stirring to keep mixture smooth.
2. Pour over crumbs and melted fat.
3. Add remaining ingredients in order given.
4. Mix thoroly and place in greased casserole, set in pan of hot water, and bake in a moderate oven until set and delicately brown.

**SAUCES**

**Cocoa Sauce ( $1\frac{3}{4}$  cups)**

$\frac{1}{2}$ tablespoon cornstarch or	$\frac{1}{4}$ cup cocoa
1 tablespoon flour	5 tablespoons dry skimmilk
$\frac{1}{2}$ cup sugar	1 cup water
$\frac{1}{4}$ teaspoon salt	2 tablespoons fat
Speck cinnamon	$\frac{1}{2}$ teaspoon vanilla

1. Mix dry ingredients in top of double boiler. Add water slowly, stirring to keep mixture smooth.

**SAUCES—Continued**

2. Cook over direct heat, stirring until it thickens.
3. Cover and cook over hot water for 15 minutes.
4. Add fat and vanilla.

**Cream Gravy (6 servings)**

6 tablespoons dry skim milk	1½ cups water
2 tablespoons flour	1 teaspoon onion (minced)
¼ teaspoon salt	3 tablespoons fat (bacon fat or salt pork drippings)

1. Mix dry ingredients. Add water slowly, stirring to keep mixture smooth.
2. Brown onion in fat. Add milk mixture and stir until it thickens—about 5 minutes.

Note: This gravy is excellent for baked or boiled potatoes or as a cream sauce for meat.

**White Sauces (3½ cups)**

	Dry skim milk	Flour	Salt	Water	Fat	Use
Thin	1 cup	2 tablespoons	¾ teaspoon	3 cups	2 tablespoons	1. Cream soups 2. Souffles
Medium	1 cup	3 tablespoons	¾ teaspoon	3 cups	3 tablespoons	1. Scalloped dishes 2. To cream cooked meat, fish or eggs, cooked vegetables, dried beef
Thick	1 cup	6 tablespoons	1 teaspoon	3 cups	6 tablespoons	1. Binder for croquette mixtures

1. Mix dry ingredients in top of double boiler. Add water slowly, stirring to keep mixture smooth.
2. Cook over direct heat, stirring until it thickens.
3. Cover and cook 20 minutes in double boiler or 5 minutes over flame.

**SOUPS****Cream Soup**

Cream soup may be made from any cooked vegetable by combining thin white sauce with the finely divided or strained vegetable and cooking several minutes to blend.

Chopped spinach makes an excellent soup.

**Cream of Pea Soup (6 servings)**

1½ cups dry skim milk	6 cups water
2 tablespoons flour	2 slices onion
1 teaspoon salt	2 tablespoons fat
Pinch of pepper	3 cups peas

1. Mix dry ingredients in top of double boiler. Add water slowly, stirring to keep mixture smooth.
2. Add onion and fat. Scald.
3. Rub peas through a sieve or mash with a fork and add to milk mixture.
4. Heat thoroly.

# SOUPS—Continued

## Cream of Tomato Soup (6 servings)

1½ cups dry skimmilk	6 cups water
3 tablespoons flour	2 slices onion
1½ teaspoons sugar	3 tablespoons fat
1½ teaspoons salt	3 cups tomatoes
¼ teaspoon pepper	

1. Mix dry ingredients in top of double boiler. Add water slowly, stirring to keep mixture smooth.
  2. Add onion and fat. Scald.
  3. Heat the strained tomatoes. Add the *hot tomatoes* to the *hot white sauce*, stirring constantly, and serve immediately.
- If tomatoes are cut very fine, none will be wasted.

# MISCELLANEOUS

## Molasses Spread (12 to 15 servings)

¼ cup molasses	¾ cup dry skimmilk
¼ cup butter or other fat (melted)	

1. Mix ingredients and beat well until blended.

Uses: Spread for bread or crackers.

Sauce for gingerbread or puddings.

Frosting for cup cakes.

## Whipped Dry Skimmilk (6 servings)

¾ cup cold water	9 tablespoons dry skimmilk
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1. Add water slowly to dry skimmilk, stirring to keep mixture smooth.
2. Scald in double boiler for 3 minutes.
3. Chill (to 42° F.)
4. Whip like whipping cream.

Variations: Add 1 teaspoon sugar and few drops vanilla, or

Fold in 1 teaspoon cocoa sauce, or

Fold in sweetened prune puree.

# DRY SKIMMILK FOR INCREASING FOOD VALUE

The use of dry skimmilk is an excellent method for increasing the nutritive value of products. Its chief advantage is the opportunity it offers to increase the milk minerals and proteins without increasing the bulk. Whenever possible, use fresh milk with added dry skimmilk.

Each tablespoon of dry skimmilk used in a product adds the following food value<sup>1</sup>:

Calories	25.7
Protein	2.51 grams
Lactose	3.45 grams
Ash	0.573 grams
Calcium	0.099 grams
Phosphorus	0.077 grams

<sup>1</sup> Rogers, L. A. (By Associates). Fundamentals of Dairy Science. Chemical Catalogue Co., Inc. New York. (1928)

## Recipes Using Dry Skimmilk for Increasing Food Value

### BEVERAGES

#### Cocoa Paste (3 cups)

1 cup cocoa	$\frac{3}{4}$ cup dry skimmilk
1 cup sugar	2 cups water
$\frac{1}{2}$ teaspoon salt	$\frac{1}{2}$ teaspoon vanilla

1. Mix dry ingredients thoroly, add water slowly, stirring to keep mixture smooth.
2. Place in top of a double boiler and bring to a boil over direct heat. Boil 3 minutes, stirring constantly. Be sure the flame is not too high as it scorches easily.
3. Place over boiling water and cook 15 minutes.
4. Beat about 1 minute with rotary beater.
5. Store in covered jar in the refrigerator.

Note: Cocoa paste is excellent for preparing cocoa beverages and can be made into chocolate sauce by the addition of water.

#### Cocoa (1 cup)

1 cup whole milk	2 teaspoons cocoa paste
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1. Scald milk.
2. Add cocoa paste and cook 3 minutes. Beat well.

#### Cocoa Egg Nog (1 cup)

1 egg	3 teaspoons cocoa paste
1 teaspoon sugar	$\frac{3}{4}$ cup whole milk
5 tablespoons dry skimmilk	3 drops vanilla
Few grains salt	

1. Beat egg until light.
2. Add sugar, dry skimmilk, salt, and cocoa paste. Beat until smooth.
3. Add milk and vanilla. Blend with egg beater.

## DRY SKIMMILK FOR CAMP COOKERY

For camp cookery dry skimmilk is invaluable because it is light in weight, is easily carried, and can be kept for long periods without refrigeration.

For short camping trips the dry ingredients for any product may be mixed when packing for the trip and water added at camp. When this is done the package should be labeled and the quantity of water to be used, indicated on the label.

## Recipes for Using Dry Skimmilk in Camp Cookery

### BEVERAGE

#### Cocoa (4 servings)

3 tablespoons cocoa	Few grains salt
2 tablespoons sugar	4 cups water
1 cup dry skimmilk	

1. Mix dry ingredients thoroly. Add water slowly, stirring until smooth.
2. Cook 5 minutes and beat with a spoon.

**BREADS—Continued**

**Camp Baking Powder Biscuits (10 biscuits)**

Temperature—Slow

Time—25 minutes

2 cups flour  
4 teaspoons baking powder  
1 teaspoon salt

5 tablespoons dry skim milk  
5 tablespoons fat  
1 cup water

1. Mix dry ingredients thoroly. Work in fat with fingers, a fork, or two knives.
2. Add water slowly, stirring with a fork until well mixed.
3. Drop from spoon on floured reflector pan or greased frying pan. Bake slowly.
4. When frying pan is used, bake until one side is lightly browned, then turn and finish baking.

Note: For a sweet biscuit, add two tablespoons of sugar and sprinkle a mixture of butter, cinnamon, and sugar on top of dropped biscuit. For a cheese biscuit, place a small piece of cheese, or grated cheese, on top of biscuit.

**Flapjacks (10 servings)**

1 cup flour  
5 tablespoons dry skim milk

2 teaspoons baking powder  
 $\frac{1}{2}$  teaspoon salt  
1 cup water

1. Mix dry ingredients thoroly. Add water slowly, stirring until smooth.
2. Drop on greased frying pan, hot enough to sizzle.
3. Turn when full of bubbles.

Note: A well beaten egg added to the mixture improves the flapjacks. A piece of bacon or salt pork makes a good greaser.

**Spider Corn Bread (6 servings)**

Cooking time—about 30 minutes

2 eggs  
1 cup water  
 $\frac{3}{4}$  cup cornmeal  
 $\frac{1}{4}$  cup white flour

5 tablespoons dry skim milk  
1 teaspoon salt  
1 teaspoon baking powder  
1 tablespoon melted fat

1. Beat the eggs and stir in water.
2. Add remaining ingredients and mix until smooth.
3. Pour into a sizzling-hot, greased frying pan. Cover.
4. Brown on one side, turn, and brown the other.
5. Finish baking slowly.

Note: This bread may be baked on a reflector pan or in a Dutch oven.

**CEREAL**

**Cornmeal Mush (8 servings)**

5 cups water  
1 teaspoon salt

1 cup cornmeal  
1 cup dry skim milk

1. Heat the salted water to boiling. Add cornmeal slowly, stirring constantly.
2. Cook over a low fire for 1 to 2 hours.
3. Stir in the dry skim milk mixed with a small amount of water 15 minutes before cooking period is completed.

Note: Pour left-over cornmeal mush into a pan and chill. Slice and fry.

**DESSERT****Rice Pudding in a Frying Pan (4 servings)**

4 tablespoons dry skim milk	1 egg (beaten)
1 tablespoon sugar	2 cups cooked rice
1 cup water	$\frac{1}{2}$ cup raisins

1. Mix dry skim milk and sugar in frying pan. Add water slowly, stirring until smooth.
2. Add the remainder of the ingredients and cook 10 minutes.

**ONE-DISH MEALS****Rice and Cheese (4 servings)**

2 tablespoons dry skim milk	$\frac{1}{2}$ cup cheese
$\frac{1}{2}$ teaspoon salt	2 cups cooked rice
$\frac{1}{2}$ cup water	

1. Mix dry skim milk and salt in frying pan. Add water slowly, stirring until smooth.
2. Cook until mixture thickens. Add cheese and stir until melted.
3. Combine with rice and cook 10 minutes.

Note: One cup tomato may be added.

**Spanish Rice (6 servings)**

3 slices bacon—diced	Salt
1 small onion—diced	Pepper
3 cups cooked rice	2 cups tomatoes
$\frac{1}{2}$ cup dry skim milk	

1. Cook bacon and onion until brown.
2. Add the other ingredients and mix thoroly.
3. Cook slowly in frying pan 30 minutes or longer.

**Corn Chowder (8 servings)**

3 slices bacon—diced	2 tablespoons flour
4 potatoes—cubed	$\frac{3}{4}$ cup dry skim milk
2 onions—sliced	1 can corn
2 cups water	3 cups water

1. Fry bacon in pan and when brown add potatoes, onions, and 2 cups of water.
2. Cook until potatoes are nearly done.
3. Add a paste made of flour, dry skim milk and a little water.
4. Add corn and water and cook 5 minutes.
5. Season if necessary.